

DWS APPROVAL: <i>Steven A. Thomas</i>	TECHNICAL PROCEDURES	SECTION TP- SM
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Certificate # L1114-1

Scope of Accreditation

For Subcontractor Schedule B2

In recognition of a successful assessment to ISO/IEC 17025:2005, accreditation is granted

Accreditation granted through: **June 21, 2010**

Calibration

Mass – Scale and Balances

Calibration Parameter/Equipment ¹	Range	Best Measurement Capability(+/-) ²	Remarks
Micro-Balances (0.1 µg resolution) (1 µg resolution) (10 µg resolution)	(0 to 2.1) g (0 to 31) g (0 to 230) g	0.021 mg 0.092 mg 0.2 mg	Method tolerances according to DWS procedures using ASTM class 1 weights
Analytical Balances (0.1 mg resolution)	(0 to 610) g	1.81 mg	Method tolerances according to DWS procedures using ASTM class 1 weights
Top Loading-Balances (1 mg resolution) (10 mg resolution) (0.1 g resolution) (1 g resolution)	(0 to 1200) g (0 to 10 000) g (0 to 64) kg (0 to 150) kg	3.78 mg 0.032 g 0.22 g 1.24 g	Method tolerances according to DWS procedures using ASTM class 1 weights
Bench Scales (0.001 lb resolution) (0.01 lb resolution)	(0 to 50) lb (0 to 300) lb	0.0038 lb 0.025 lb	Method tolerances according to DWS procedures using ASTM class F weights

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Calibration Parameter/Equipment ¹	Range	Best Measurement Capability(+/-) ²	Remarks
Floor Scales, Tanks and Hoppers (0.1 lb resolution) (1 lb resolution) (10 lb resolution)	(0 to 3000) lb (0 to 15 000) lb (0 to 40 000) lb	0.2 lb 1.23 lb 11.61 lb	Method tolerances according to DWS procedures using ASTM class F weights
Crane and hanging scales (1 lb resolution)	(0 to 5000) lb	0.64 lb	Method tolerances according to DWS procedures using ASTM class F weights
Crane and hanging scales (1 lb resolution) (11 lb resolution)	(0 to 5 000) lb (0 to 50 000) lb	3.96 lb 39.7 lb	Method tolerances according to DWS procedures using reference load cell

Mass – Force

Calibration Parameter/Equipment	Range	Best Measurement Capability(+/-) ²	Remarks
Force gauges and sensors used in force measurement applications	(0 to 1000) lbf	0.14 % of Full Scale	Method tolerances according to DWS procedures using ASTM class F weights
Force gauges and sensors used in force measurement applications	(0 to 50 000) lbf	0.035 % of Full scale	Method tolerances according to DWS procedures using reference load cell

Mass – Mass Standards

Calibration Parameter/Equipment	Range	Best Measurement Capability(+/-) ²	Remarks
Class F lb weights	50 lb	217.6 mg	Comparison of Unknown Mass to a Known Mass ASTM E-617 Class-4 Weights
	25 lb	108.7 mg	
	20 lb	106.1 mg	
	10 lb	32.9 mg	
	5 lb	39.9 mg	
	2 lb	3.6 mg	
	1 lb	2.4 mg	
	0.5 lb	1.9 mg	
	0.25 lb	0.5 mg	
	0.2 lb	0.4 mg	
	0.125 lb	0.5 mg	
	0.1 lb	0.5 mg	
	0.05 lb	0.1 mg	
	0.02 lb	0.09 mg	
0.01 lb	0.09 mg		



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Calibration Parameter/Equipment	Range	Best Measurement Capability(+/-) ²	Remarks
Class F kg weights	25000 g	220.6 mg	Comparison of Unknown Mass to a Known Mass ASTM E-617 Class-4 Weights
	10000 g	107.1 mg	
	5000 g	33.7 mg	
	2000 g	29.7 mg	
	1000 g	3.9 mg	
	500 g	2.4 mg	
	200 g	0.7 mg	
	100 g	0.6 mg	
	50 g	0.2 mg	
	30 g	0.1 mg	
	20 g	0.1 mg	
	10 g	0.1 mg	
	5 g	0.1 mg	
3 g	0.1 mg		
2 g	0.1 mg		
1 g	0.1 mg		

Notes:

- 1) Laboratory offers calibration services at the laboratory's own facilities and at the client or other agreed upon facilities.
- 2) Best uncertainties represent expanded uncertainties at approximately the 95% confidence level using a coverage factor of k=2.

Approved by:  Date: November 1, 2007
R. Douglas Leonard
Chief Technical Officer

Re-Issued: 3/18/04 Revised: 1/18/05 Revised: 11/23/05 Revised: 07/17/07 Revised: 11/1/07